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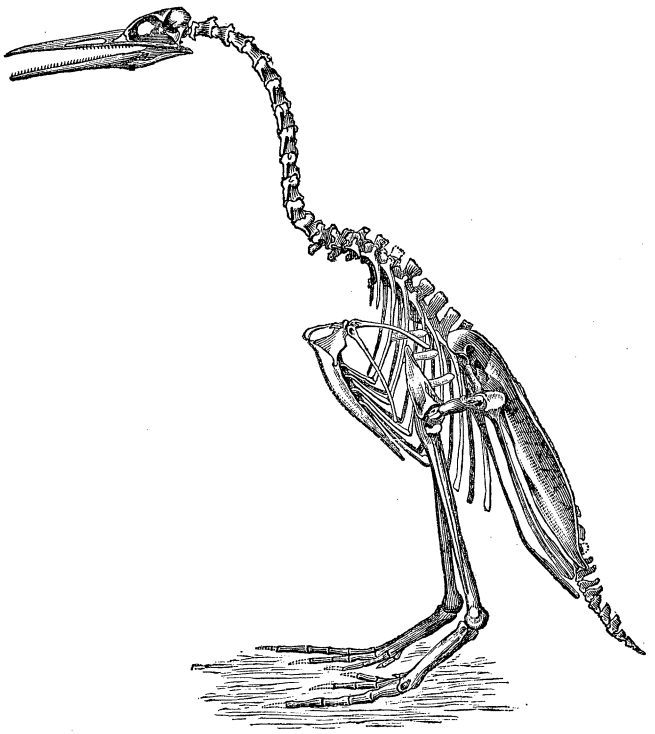
NOTE. We shall be glad to receive the titles of papers read before scientific bodies, or published in the journals of our country. — O. T. MASON, Washington, D. C.

GEOLOGY AND PALÆONTOLOGY.

INFLUENCE OF GEOLOGICAL CHANGES ON THE EARTH'S AXIS OF ROTATION. — Mr. George H. Darwin has presented a paper on this subject to the Royal Society. He concludes that if the earth be quite rigid, no redistribution of matter in new continents could ever cause the deviation of the pole from its primitive position to exceed the limit of about 3°. But if the view, that the earth readjusts itself periodically to a new form of equilibrium, is correct, then there is a possibility of a cumulative effect; and the pole may have wandered some 10° or 15° from its primitive position, or have made a smaller excursion, and returned to near its old place. No such cumulation is possible, however, with respect to the obliquity of the ecliptic. It is suggested that possibly the glacial period may not have been really one of great cold, but that Europe and North America may have been then in a much higher latitude, and that on the pole retreating they were brought back again to the warmth. There seem to be, however, certain geological objections to this view.

Recent Palæontological Discoveries in the West. — Prof. O. C. Marsh contributes to the July number of the American Journal of Science and Arts, the results of his studies of the *Coryphodontidæ*, a family comprising the oldest known tertiary mammals, the fossil bones coming from the base of the Eocene formation of Utah, Wyoming, and New Mexico. *Coryphodon* was an Ungulate and among the mammals associated with it were "the equine *Eohippus*, and the suilline *Helohyus*, showing clearly that we must look to Cretaceous strata at least for the parent form of the Ungulates." The paper is accompanied by figures of the skull of Coryphodon, and the feet bones of *Coryphodon* and *Dinoceras*.



(Fig. 84.) RESTORATION OF HESPERORNIS REGALIS Marsh (about one tenth natural size).

The accompanying illustration is a restoration of *Hesperornis regalis*, about one tenth of the natural size. It is a cretaceous bird with teeth, and Professor Marsh on fresh examination finds some additional characters of importance of the order *Odontornithes*, of which it is a type. He also describes a new species of small swimming bird, which comes from the same geological horizon (cretaceous) and has been called by him *Baptornis advenus*. An enormous Dinosaur (*Titanosaurus montanus*) is also described as new from the cretaceous deposits of Colorado.

On the Classification of the Recent and Fossil Fishes. — Professor Cope has recently reviewed the structure of the fossil fishes, and proposed a number of necessary modifications of the system as left by Agassiz in the *Poissons Fossiles.* He has confirmed the views of various naturalists, that the class or sub-class *Ganoidea* of that author consists of heterogeneous materials, which must be distributed in a number of sub-classes. He recognizes four sub-classes of *Pisces:* namely, the *Holocephali*, the *Dipnoi*, the *Selachii*, and the *Hyopomata.* The last named is proposed for that natural assemblage which possess a hyo-mandibular bone articulated with the cranium, a maxillary arch, and no median axis of the basal portion of either pectoral or ventral fins. Under this group he arranges three tribes, namely, the *Crossopterygia* (or *Ganoidea*), the *Chondrostei*, and the *Actinopteri;* the last made up of the *Teleostei* of Müller, and a few recent, and many extinct fishes referred by Agassiz and Müller to the "Ganoidei." Professor Cope shows that Huxley's "suborder *Crossopterygia,*" is also a heterogeneous assemblage, many of the forms referred to it belonging to the *Dipnoi*, while others are true *Hyopomata.*

The fossil fishes referred to the *Actinopteri* were found to be most nearly related to the order *Isospondyli;* none of them presenting near affinities to *Lepidosteus*, so far as discoverable. An exception to this statement, is the genus *Dorypterus*, which was regarded as typical of a new order presenting some relationship to Acanthopterygian orders. The order was named the *Docopteri.* The fossil families referred to the *Isospondyli*, are the *Sauropsidæ* (*Sauroidei* Agass. pt.), *Lepidotidæ* (*Lepidoides* Agass. pt.), *Pycnodontidæ* (*Pycnodontes* Agass. pt.), and *Dupediidæ* (*Lepidoides* Agass. pt.)

MICROSCOPY.

The New Model Illuminating Adjustment. — The plan of mounting the diaphragm, substage, and mirror upon a bar so hinged that they shall all swing concentrically around the object, now successfully and extensively carried out by both Zentmayer and Gundlach, has given rise to an unusually interesting question of priority. The fact that the Rochester stands at the Centennial Exhibition, at the time of its opening, had the mirror stem hinged slightly below the plane of the object, has been not unreasonably, though incorrectly, understood by some writers to indicate that there was at that time no intention to secure fully the advantages of the concentric swing. Mr. Gundlach, however, makes a fully conclusive explanation of the apparent discrepancy. As there is no doubt that Mr. Zentmayer had then completed and made public his invention, it cannot be doubted that both parties fully matured the plan independently.

So simple a device could hardly have escaped the efforts of previous workers. It was foreshadowed in the semi-cylinder of Mr. Tolles, with